

## [SPECIFICATION]

### [TITLE OF THE INVENTION]

MICROWAVE OVEN

### [BRIEF DESCRIPTION OF THE DRAWINGS]

5        FIG. 1 is a perspective view of a microwave oven,  
according to the present invention;

      FIG. 2 is a sectional view of the microwave oven,  
according to the present invention; and

      FIG. 3 is a sectional view taken along the line III- III' of  
10 FIG. 2.

#### \* Description of reference characters of main parts \*

10: cabinet,	11: microwave cooking cavity,
12: toasting cavity,	13: machine room,
16: control panel,	23: magnetron,
15 24: high-voltage transformer,	
25: high-voltage condenser,	
26: cooling fan,	27: Upper heater,
28: lower heater,	29: grill member,
31: air inlet port,	32: ventilating fan,
20 34: air outlet port,	35: deodorizing filter.

### [DETAILED DESCRIPTION OF THE INVENTION]

#### [OBJECT OF THE INVENTION]

#### [FIELD OF THE INVENTION AND PRIOR ART]

      The present invention relates, in general, to microwave  
25 ovens and, more particularly, to a microwave oven which is

provided with a toasting cavity for toasting bread.

As well known to those skilled in the art, a microwave oven is an appliance which cooks food laid in its cooking cavity using microwaves irradiated from a magnetron into the cooking cavity. That is, a general cooking device cooks food by heating the surface of the food, but the microwave oven is operated such that its magnetron irradiates microwaves into the cooking cavity to vibrate water within food and generate frictional heat within the food, thereby cooking it. Recently, there has been proposed a microwave oven which has a heater in its cooking cavity. The microwave oven cooks food using heat generated from the heater installed in the cooking cavity as well as microwaves, thus more effectively cooking food.

Toast is made by heating the surface of bread. Thus, in case of toasting bread, the conventional microwave oven uses microwaves, so its cooking efficiency is poor, in comparison with conventional electrical heating devices which cook food by heating the surface of food.

Further, the microwave oven having the heater in its cooking cavity may heat bread using heat generated from the heater, thus being capable of toasting the bread. However, such a microwave oven has a problem in that the heater is installed at an upper portion of the cooking cavity, so an additional shelf is needed to place the bread closer to the heater, thus being inconvenient to use. Further, the bread

must be turned over during toasting, to uniformly heat both surfaces of the bread, thus being more complicated to use.

#### [OBJECT OF THE INVENTION]

Accordingly, it is an aspect of the present invention to  
5 provide a microwave oven, which is provided with a toasting cavity in addition to a microwave cooking cavity, thus making well-toasted breads.

Additional aspects and advantages of the invention will be set forth in part in the description which follows and, in  
10 part, will be obvious from the description, or may be learned by practice of the invention.

#### [CONSTRUCTION AND OPERATION OF THE INVENTION]

The foregoing and other aspects of the present invention are achieved by providing a microwave oven, including a cabinet  
15 partitioned into a microwave cooking cavity, a toasting cavity, and a machine room, a microwave generating unit installed in the machine room to irradiate microwaves into the microwave cooking cavity, a heating unit installed in the toasting cavity to heat the toasting cavity, and a ventilating unit to  
20 ventilate the toasting cavity.

Further, according to the present invention, the toasting cavity is provided above the microwave cooking cavity, and the machine room is provided at a side of the toasting cavity and the microwave cooking cavity.

25 The heating unit includes an upper heater installed at an

upper portion of the toasting cavity, and a lower heater installed at a lower portion of the toasting cavity. A grill member is provided above the lower heater, with bread being placed on the grill member.

5 Further, the ventilating unit includes an air inlet port provided at a predetermined portion on a sidewall between the machine room and the toasting cavity, a ventilating fan mounted at the portion of the sidewall through which the air inlet port is formed to circulate air from the machine room into the  
10 toasting cavity, and an air outlet port provided at a predetermined portion of a wall of the toasting cavity to discharge air from the toasting cavity to the outside.

A deodorizing filter is provided at the portion of the wall through which the air outlet port is formed to remove  
15 odors from the air which is discharged from the toasting cavity to the outside.

The toasting cavity and the microwave cooking cavity are opened at fronts thereof, and doors are mounted to the open fronts of the toasting cavity and the microwave cooking cavity,  
20 thus opening or closing the toasting cavity and the microwave cooking cavity, respectively.

A high-voltage transformer and a high-voltage condenser to apply a high voltage to the microwave generating unit, and a cooling fan to cool the high-voltage transformer and the high-  
25 voltage condenser are installed in the machine room.

This invention will be described in further detail by way of example with reference to the accompanying drawings.

As illustrated in FIGS. 1 and 2, a microwave oven according to the present invention includes a cabinet 10. The cabinet 10 is partitioned into a microwave cooking cavity 11, a  
5   toasting cavity 12, and a machine room 13. Food is heated and cooked using microwaves in the microwave cooking cavity 11. Bread is toasted in the toasting cavity 12. Several electrical devices are installed in the machine room 13. In this case,  
10   the toasting cavity 12 is provided above the microwave cooking cavity 11, and the machine room 13 is provided at a side of the microwave cooking cavity 11 and the toasting cavity 12.

The microwave cooking cavity 11 and the toasting cavity 12 are opened at fronts thereof, thus allowing food to be put into  
15   or taken out from the microwave cooking cavity 11 or the toasting cavity 12. Doors 14 and 15 are mounted to the fronts of the microwave cooking cavity 11 and the toasting cavity 12, thus opening or closing the microwave cooking cavity 11 and the toasting cavity 12, respectively. A control panel 16 is  
20   mounted to the front of the machine room 13, and is provided with a display unit 17 which displays the operation of the microwave oven and a plurality of control buttons 18 which controls several functions of the microwave oven. The doors 14 and 15 which open or close the microwave cooking cavity 11 and  
25   the toasting cavity 12, respectively, are hinged at their lower

portions to the fronts of the microwave cooking cavity 11 and the toasting cavity 12 in such a way as to be rotated forward and backward. Hooks 14a and 15a are provided on upper portions of the doors 14 and 15, respectively.

5        A cooking tray 21 is mounted to a lower portion of the microwave cooking cavity 11 in such a way as to be rotated to uniformly heat food placed on the cooking tray 21. A drive motor 22 is installed in the space between the bottom of the microwave cooking cavity 11 and the cabinet's bottom under the  
10 microwave cooking cavity 11 to rotate the cooking tray 21. A magnetron 23, a high-voltage transformer 24, and a high-voltage condenser 25 are installed in the machine room 13. The magnetron 23 irradiates microwaves into the microwave cooking cavity 11. The high-voltage transformer 24 and the high-  
15 voltage condenser 25 function to apply a high voltage to the magnetron 23. Further, a cooling fan 26 is mounted to a rear wall of the machine room 13, and functions to blow exterior air into the machine room 13 to cool the electrical devices installed in the machine room 13.

20        Upper and lower heaters 27 and 28 are mounted to upper and lower portions of the toasting cavity 12, respectively, to heat and toast bread. When power is applied to the microwave oven, the upper and lower heaters 27 and 28 are heated. A grill member 29 made of a plurality of wires is provided above the  
25 lower heater 28 in the toasting cavity 12 so that bread is

placed on the grill member 29 in such a way as to be spaced apart from the lower heater 28.

As illustrated in FIGS. 1 and 3, the toasting cavity 12 is provided with a ventilating unit to ventilate the toasting  
5 cavity 12. The ventilating unit includes a plurality of air inlet ports 31, a ventilating fan 32, and a plurality of air outlet ports 34. A sidewall 30 between the machine room 13 and the toasting cavity 12 is perforated at a predetermined area to form the air inlet ports 31. The ventilating fan 32 is mounted  
10 at the sidewall through which the air inlet ports 31 are formed, thus circulating air from the machine room 13 into the toasting cavity 12. A rear wall of the toasting cavity 12 is perforated at a predetermined area to form the air outlet ports 34, thus discharging air from the toasting cavity 12 to the  
15 outside. Further, a deodorizing filter 35 is provided at the rear wall through which the air outlet ports 34 are formed.

An annular air guide member 33 is provided at the sidewall 30 through which the air inlet ports 31 are formed, and guides air so that it flows into the toasting cavity 12 through the  
20 air inlet ports 31 by operation of the ventilating fan 32. Further, a depressed seat 36 is provided at the rear wall of the toasting cavity 12, so that the odorizing filter 35 is seated into the depressed seat 36. A cover member 37 is fastened to the depressed seat 36 using setscrews 38 to cover  
25 the odorizing filter 35. A plurality of perforations 37a are

provided in the cover member 37.

The operation and use of the microwave oven according to the present invention will be described in the following.

When one desires to heat and cook food using microwaves,  
5 the food is laid in the microwave cooking cavity 11. Next, with the operation of the microwave oven, microwaves generated from the magnetron 23 are irradiated into the microwave cooking cavity 11, thus cooking the food.

Meanwhile, when one desires to toast bread, the bread is  
10 placed on the grill member 29 installed in the toasting cavity 12. Thereafter, the control panel 16 is manipulated to heat the upper and lower heaters 27 and 28, thus toasting the bread. At this time, smoke and odors generated in the toasting cavity 12 are discharged to the outside by the operation of the  
15 ventilating fan 32. That is, when the ventilating fan 32 is operated, air flows from the machine room 13 through the air inlet ports 31 into the toasting cavity 12. Air in the toasting cavity 12 is discharged to the outside through the air outlet ports 34.

20 Further, smoke and odors in the discharged air are removed while passing the deodorizing filter 35, thus preventing the air of a room from being contaminated by the air discharged from the toasting cavity 12. Further, the bread placed on the grill member 29 is simultaneously heated by the upper and lower  
25 heaters 27 and 28, thus allowing both surfaces of the bread to



be uniformly toasted.

#### [EFFECT OF THE INVENTION]

As apparent from the above description, the present invention provides a microwave oven, which is provided with a  
5 toasting cavity in addition to a microwave cooking cavity, thus allowing food to be cooked using microwaves and making well-toasted breads.